

# Quality Assurance Quality Control

Murage Ngatia

November 9, 2010

# Concept of Quality Systems

**The idea of Quality Systems is now new!**

- Walter E. Shewhart invented the basic control chart in 1924
- W.E. Deming (1900-1993) emphasized quality could not be improved without management involvement
- J.M. Juran (1904-2008) was a strong believer in the role of management in improving quality. Juran and Deming are credited with Japanese quality improvement after WW II
- Armand V. Feigenbaum (1922) invented the concept of total quality management

# Elements of a Quality System

- Management and organization
- Personnel (technician level) competence. This is both for field and lab operator level
- Equipment use and maintenance
- Data validation
- Corrective actions

# Elements of a Quality System

- Working Procedures (methods, reports, records, security)
- Quality Audits
- Documentation
- Corrective actions

# Definitions: QA

- QA (Quality Assurance) can be described as the **total integrated program to assure that the uncertainties of data are known (documented)**
- The scope of QA encompasses the plans, specifications, and policies affecting the collection, processing, and reporting of data.

# Q A ...

- Set of operating principles
- Produces data of known and defensible quality
- Followed during sample collection and analysis
- Helps to identify goals and objectives
- Establishes plans and processes to meet goals

# Definitions: QA

- QA is implemented at the organizational level. It is mainly **Policies and Procedures**
- Water Resources Memorandum 60 (1992) authorized the establishment of an environmental Quality System in DWR
- The policies and procedures of WREM 60 were formalized with publication and approval of
- *“Quality Assurance Management Plan for Environmental Monitoring Programs (1998)”*

# Definition of QC

- Quality Control is implemented at the technician/ lab-field operator level



# Definitions: QC

- QC (Quality Control) can be defined as the routine **application of operational techniques** (in the field and laboratory) **to reduce random and systematic errors**
- QC generates the **documentation** necessary to evaluate whether you have reduced errors to an acceptable level.

# Quality Control

- Routine application of operational techniques reduces random and systematic errors
- Ensures that data are generated at acceptable performance levels
- Implemented at the operator level
- Focus is on technical activities to validate data

Examples: Selection and calibration of equipment, incorporation of field blanks and replicates, lab QC measures (calibrations, QC checks such as blanks, standards, LCS, MS/MSDs, etc

# Quality Assessment (Audits)

- Assures that the QC job is done effectively
- Involves continuing evaluation of measurements produced
- Involves continuing evaluation of measurement system